NOTES TO THE READER

This annual report contains information on Federal funding of the research and development (R&D) components of agency programs, as proposed by the administration for fiscal year (FY) 2003. R&D data in this report are classified into the same Federal budget function categories used in the *Budget of the United States Government, Fiscal Year 2003*, prepared by the Office of Management and Budget. Proposed FY 2003 funding levels are for budget authority (defined below), which is the basis for initial congressional action. In future *Budget Function* reports, these data will be revised to reflect congressional appropriation and actual program-funding decisions.

Detailed data are included on *preliminary* estimates for Federal funding of R&D in FY 2002 that reflect all past congressional actions, but may be revised, since at the time of report preparation, FY 2002 had not yet been completed. This report also includes detailed data (by subfunction) on actual budget authorizations of R&D by Federal agencies in FY 2001 and aggregate data (by broad function) on actual R&D budget authorizations in FY 2001 and earlier years.

REPORT ORGANIZATION

These notes introduce basic budget terms and concepts used in this report. The rest of the report is divided into three sections:

Federal R&D Budget Authority by Budget Function consists of six tables. Table 1 contains total combined R&D and R&D plant data. Tables 2, 3, and 6 provide an overview of Federal R&D funding in the context of requested total Federal budget authority. Table 4 contains data on Federal R&D funding for national defense and civilian programs in current and constant 1996 dollars for FYs 1955–2003. Table 5 contains data on budget authority for basic research by budget function for FYs 2001–03.

R&D by Specific Budget Function presents data on R&D activities conducted within each budget function. This section consists of 18 tables (tables 7 through 24) providing a summary for FYs 2001–03.

Historical Tables presents two historical data series: (1) Federal R&D funding by budget function for FYs 1955–2003 (tables 25a through 25h) and (2) Federal funding of basic research for FYs 1978–2003 (tables 26a through 26d).

DEFINITIONS

RESEARCH AND DEVELOPMENT

As used in this report, R&D refers to research—both basic and applied—and development activities in the sciences and engineering.

Research and Development activities comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications.

R&D includes those funds for personnel, program supervision, and administrative support directly associated with R&D activities. Expendable or movable equipment needed to conduct R&D—e.g., microscopes or spectrometers—is also included.

Research is systematic study directed toward fuller scientific knowledge or understanding of the subject studied. Research is classified as either basic or applied according to the objective of the sponsoring agency.

- In **basic research**, the objective of the sponsoring agency is to gain fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications toward processes or products in mind.
- In **applied research**, the objective of the sponsoring agency is to gain knowledge or understanding necessary for determining means by which a recognized and specific need may be met.

Development is the systematic use of the knowledge or understanding gained from research directed toward the production of useful materials, devices, systems, or methods, including design, development, and improvement of prototypes and new processes. It excludes quality control, routine product testing, and production.

R&D plant includes the acquisition, design, and construction of, or major repairs or alterations to, all physical facilities for use in R&D activities. Facilities include land,

buildings, and fixed capital equipment. It includes the International Space Station and such fixed facilities as reactors, wind tunnels, and particle accelerators. This report includes data on R&D plant funds. These authorizations are included in tables 1 and 11. All other tables in this report exclude R&D plant and are for R&D authorizations only.

Budget Authority, Obligations, and Outlays

The Federal R&D funding data presented here are, with a few noted exceptions, provided in budget authority. Budget authority is used because it is the initial budget parameter for congressional action on the President's proposed budget. Budget authority imposes a ceiling on obligations and outlays; obligations and outlays flow from budget authority.

- **Budget authority** is the primary source of legal authorization to enter into obligations that will result in outlays. Budget authority is most commonly granted in the form of appropriations by the congressional committees assigned to determine the budget for each function.
- **Obligations** represent the amounts for orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when the funds were appropriated and when the future payment of money is required.
- **Outlays** represent the amounts for checks issued and cash payments made during a given period, regardless of when the funds were appropriated or obligated.

Budget Functions

All activities covered by the Federal budget, including R&D, are classified into 20 broad functional categories. The Federal budget total comprises funding for these 20 functions. An agency's activities are not necessarily included in only one function. Instead, the programs of one agency typically are distributed across functions, and each function often includes programs from multiple agencies. No overlap occurs between functions or between the various agency programs within those functions. In a few cases, components of a major national effort are funded through multiple functions, such as the human genome mapping effort, which is funded under the health and general science categories.

Notably, each specific R&D activity is assigned to only one function area, consistent with the official codes used in budget documents, even though the R&D activity may address several functional concerns. For example, except for those of the U.S. Army Corps of Engineers, all R&D activities sponsored by the Department of Defense (DoD) are classified as defense, even though some activities have secondary objectives such as space or health. Moreover, only R&D funded by the Department of Health and Human Services and the Department of Labor is classified in the health function category. Yet some R&D funding, from at least three additional agencies—DoD and the Departments of Energy and Veterans Affairs—has a major health component.

The functional categories and definitions used in this report are the same as those used in the Federal budget, with one exception. R&D activities categorized as general science, space, and technology (function 250) are reported separately here. Subfunction 251 contains R&D activities for general science and basic research, and subfunction 252 contains R&D activities for space research and technology. Not all federally sponsored basic research is categorized in function 251, however; some basic research is included in 12 of the remaining 19 functional categories.

Five Federal budget functions—Medicare (function 570), social security (function 650), net interest (function 900), allowances (function 920), and undistributed offsetting receipts (function 950)—have no R&D components. Consequently, they are not discussed in this report, except where R&D is described as a proportion of total Federal budget authority.

The agency/function crosswalk on the following page lists—by name and function code—the 16 individual R&D functions funded by agencies.

Data Sources

Within the overall Federal budget there is no separately identified R&D budget as such; nor are most appropriations for R&D so labeled except in the case of certain program areas such as defense, energy, health, and environment. Consequently, most funds for R&D are not line items in an agency's budget submission but are included within general program funding. To determine funding for Federal R&D, the Office of Management and Budget (OMB) requires agencies with annual R&D

funding greater than $10 million to submit data on their R&D programs as part of their annual budget submissions. Specifically, the agencies provide data—reported, in accordance with OMB Circular A-11, MAX Schedule C, "Research and Development Activities"—on funding levels for basic research, applied research, development, R&D facilities, and major equipment for R&D.

Data in this report represent agencies' best estimates of actual and proposed Federal funding for R&D collected during the period between February and April 2002. These data are based primarily on information provided to OMB by 23 agencies and account for an estimated 99 percent of all federally sponsored R&D activities. Also incorporated in this report is R&D information that became available from the individual agencies after the administration's budget was prepared and reported in the *Budget of the United States Government.* Such information consists of agency budget justification documents submitted to Congress and supplemental, program-specific information obtained from agency budget and program staff through mid-March 2002. Therefore, budget numbers for individual activities, programs, or agencies may differ slightly from those published in the President's budget or agency budget documents.